CLAIMS

1. An anisotropic conductive film characterized in that a metal powder having the form of a lot of fine metal particles being linked in a chain shape is contained as a conductive component.

2. The anisotropic conductive film according to claim 1, characterized in that the chain of the metal powder is oriented in the thickness direction of the film.

3. The anisotropic conductive film according to claim 1, characterized in that the chain-shaped metal powder or each of the metal particles forming the metal powder is formed of

· a metal having paramagnetism,

· an alloy of two or more types of metals having paramagnetism,

· an alloy of a metal having paramagnetism and another metal, or

· a complex containing a metal having paramagnetism.

4. The anisotropic conductive film according to claim 2, characterized in that the whole or a part of the chain-shaped metal powder or each of the metal particles is formed by being deposited

in a solution containing one type or two or more types of metal ions containing ions forming the metal having paramagnetism by reducing the ions to a metal using a reducing agent in the solution.

5. The anisotropic conductive film according to claim 3, characterized in that the reducing agent is a trivalent titanium compound.

6. The anisotropic conductive film according to claim 1, characterized in that a chain-shaped metal powder and a binding agent are respectively contained as solid contents, and a filling factor represented by the ratio of the amount of the metal powder to the total amount of the solid contents is 0.05 to 20 % by volume.

7. The anisotropic conductive film according to claim 1, characterized in that used as the metal powder is one having the form of a lot of fine metal particles being linked in a straight-chain shape or a needle shape.

8. The anisotropic conductive film according to claim 1, characterized in that the length of the chain of the metal powder is less than the distance between adjacent electrodes, composing a connecting portion, conductively connected by using the anisotropic conductive film.

9. The anisotropic conductive film according to claim 8, characterized in that the diameter of the chain of the metal powder is not more than 1 μm.

10. The anisotropic conductive film according to claim 9, characterized in that the particle diameter of each of the metal particles is not more than 400 nm.

11. The anisotropic conductive film according to claim 8, characterized in that the ratio L/D of the length L to the diameter D of the chain of the metal powder is not less than 3.

12. The anisotropic conductive film according to claim 8, characterized in that the chain-shaped metal powder is formed of a complex of a chain formed of a metal having paramagnetism, an alloy of two or more types of metals having paramagnetism, an alloy of a metal having paramagnetism and another metal, or a complex containing a metal having paramagnetism and at least one metal, with which a surface of the chain is coated, selected from a group consisting of Cu, Rb, Rh, Pd, Ag, Re, Pt, and Au.

13. The anisotropic conductive film according to claim 2, characterized in that the

diameter of the chain of the metal powder exceeds 1 μm and is not more than 20 μm.

14. The anisotropic conductive film according to claim 13, characterized in that a chain-shaped metal powder and a binding agent are respectively contained as solid contents, and a filling factor represented by the ratio of the amount of the metal powder to the total amount of the solid contents is 0.05 to 5 % by volume.

15. The anisotropic conductive film according to claim 13, characterized in that the chain-shaped metal powder is formed of a complex of a chain formed of a metal having paramagnetism, an alloy of two or more types of metals having paramagnetism, an alloy of a metal having paramagnetism and another metal, or a complex containing a metal having paramagnetism and at least one metal, with which a surface of the chain is coated, selected from a group consisting of Cu, Rb, Rh, Pd, Ag, Re, Pt, and Au.

16. A method of producing the anisotropic conductive film according to claim 2, characterized by comprising the steps of applying a composite material, having fluidity, containing a chain-shaped metal powder formed of

a metal at least a part of which has paramagnetism and a binding agent on a base to which a magnetic field is applied in a direction crossing a surface of the base, to orient the chain of the metal powder in the composite material in the thickness direction of the film along the direction of the magnetic field, and solidifying or curing the composite material to fix the orientation of the chain.

17. The method of producing the anisotropic conductive film according to claim 2, characterized by comprising the steps of spraying a chain-shaped metal powder formed of a metal at least a part of which has paramagnetism on a base to which a magnetic field is applied in a direction crossing a surface of the base, to orient the chain of the metal powder in the direction of the magnetic field, and applying thereon a coating agent, having fluidity, containing a binding agent, and solidifying or curing the coating agent to fix the orientation of the chain.